

BUG 2 0144

U S APPLICATION NO (If known, see 37 CFR 1.5)

09/937246

INTERNATIONAL APPLICATION NO.  
PCT/IB00/01767

INTERNATIONAL FILING DATE  
23 NOVEMBER 2000

PRIORITY DATE CLAIMED  
25 JANUARY 2000

**TITLE OF INVENTION**

### THREE PIECE WHEEL FOR MOTOR VEHICLES

APPLICANT(S) FOR DO/EO/US

BERNONI, Claudio

Applicant herewith submits to the United States Designated/Elected Office (DO/EO/US) the following items and other information:

1. ☒ This is a **FIRST** submission of items concerning a filing under 35 U.S.C. 371.
2. ☐ This is a **SECOND** or **SUBSEQUENT** submission of items concerning a filing under 35 U.S.C. 371.
3. ☐ This is an express request to begin national examination procedures (35 U.S.C. 371(f)). The submission must include items (5), (6), (9) and (21) indicated below.
4. ☐ The US has been elected by the expiration of 19 months from the priority date (Article 31).
5. ☒ A copy of the International Application as filed (35 U.S.C. 371(c)(2))
  - a. ☒ is attached hereto (required only if not communicated by the International Bureau).
  - b. ☒ has been communicated by the International Bureau.
  - c. ☐ is not required, as the application was filed in the United States Receiving Office (RO/US).
6. ☐ An English language translation of the International Application as filed (35 U.S.C. 371(c)(2)).
  - a. ☐ is attached hereto.
  - b. ☐ has been previously submitted under 35 U.S.C. 154(d)(4).
7. ☒ Amendments to the claims of the International Application under PCT Article 19 (35 U.S.C. 371(c)(3))
  - a. ☐ are attached hereto (required only if not communicated by the International Bureau).
  - b. ☐ have been communicated by the International Bureau.
  - c. ☐ have not been made; however, the time limit for making such amendments has NOT expired.
  - d. ☒ have not been made and will not be made.
8. ☐ An English language translation of the amendments to the claims under PCT Article 19 (35 U.S.C. 371 (c)(3)).
9. ☒ An oath or declaration of the inventor(s) (35 U.S.C. 371(c)(4)).
10. ☐ An English language translation of the annexes of the International Preliminary Examination Report under PCT Article 36 (35 U.S.C. 371(c)(5)).

**Items 11 to 20 below concern document(s) or information included:**

11. ☐ An Information Disclosure Statement under 37 CFR 1.97 and 1.98.
12. ☒ An assignment document for recording. A separate cover sheet in compliance with 37 CFR 3.28 and 3.31 is included.
13. ☒ A FIRST preliminary amendment.
14. ☐ A SECOND or SUBSEQUENT preliminary amendment.
15. ☐ A substitute specification.
16. ☐ A change of power of attorney and/or address letter.
17. ☐ A computer-readable form of the sequence listing in accordance with PCT Rule 13ter.2 and 35 U.S.C. 1.821 - 1.825.
18. ☐ A second copy of the published international application under 35 U.S.C. 154(d)(4).
19. ☐ A second copy of the English language translation of the international application under 35 U.S.C. 154(d)(4).
20. ☒ Other items or information: International Search Report (PCT/ISA/210)  
Notice Concerning Submission of Transmittal  
of Priority Document

U.S. PATENT NO. (if known) <b>09/937246</b>		INTERNATIONAL APPLICATION NO <b>PCT/IB00/01767</b>		ATTORNEY'S DOCKET NUMBER <b>BUG 2 0144</b>	
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21. <input checked="" type="checkbox"/> The following fees are submitted: <b>BASIC NATIONAL FEE (37 CFR 1.492 (a) (1) - (5)):</b> Neither international preliminary examination fee (37 CFR 1.482) nor international search fee (37 CFR 1.445(a)(2)) paid to USPTO and International Search Report not prepared by the EPO or JPO ..... <b>\$1000.00</b>  International preliminary examination fee (37 CFR 1.482) not paid to USPTO but International Search Report prepared by the EPO or JPO ..... <b>\$860.00</b>  International preliminary examination fee (37 CFR 1.482) not paid to USPTO but international search fee (37 CFR 1.445(a)(2)) paid to USPTO ..... <b>\$710.00</b>  International preliminary examination fee (37 CFR 1.482) paid to USPTO but all claims did not satisfy provisions of PCT Article 33(1)-(4) ..... <b>\$690.00</b> International preliminary examination fee (37 CFR 1.482) paid to USPTO and all claims satisfied provisions of PCT Article 33(1)-(4) ..... <b>\$100.00</b> <b>ENTER APPROPRIATE BASIC FEE AMOUNT =</b>				<b>CALCULATIONS PTO USE ONLY</b>	
				<b>\$ 1,000.00</b>	
Surcharge of <b>\$130.00</b> for furnishing the oath or declaration later than <input type="checkbox"/> 20 <input type="checkbox"/> 30 months from the earliest claimed priority date (37 CFR 1.492(e)).				<b>\$</b>	
CLAIMS	NUMBER FILED	NUMBER EXTRA	RATE	\$	
Total claims	6 - 20 =	÷ 0 -	x \$18.00	\$	
Independent claims	1 - 3 =	- 0 -	x \$80.00	\$	
MULTIPLE DEPENDENT CLAIM(S) (if applicable)				+ \$270.00	
<b>TOTAL OF ABOVE CALCULATIONS =</b>				\$	
<input checked="" type="checkbox"/> Applicant claims small entity status. See 37 CFR 1.27. The fees indicated above are reduced by 1/2.				+ \$ (500.00)	
<b>SUBTOTAL =</b>				<b>\$ 500.00</b>	
Processing fee of <b>\$130.00</b> for furnishing the English translation later than <input type="checkbox"/> 20 <input type="checkbox"/> 30 months from the earliest claimed priority date (37 CFR 1.492(f)).				<b>\$</b>	
<b>TOTAL NATIONAL FEE =</b>				\$	
Fee for recording the enclosed assignment (37 CFR 1.21(h)). The assignment must be accompanied by an appropriate cover sheet (37 CFR 3.28, 3.31). <b>\$40.00</b> per property +				<b>\$ 40.00</b>	
<b>TOTAL FEES ENCLOSED =</b>				<b>\$ 540.00</b>	
				Amount to be refunded: \$	
				charged: \$	

a. ☒ A check in the amount of \$ 500.00 to cover the above fees is enclosed.

b. ☒ A check in the amount of \$40.00 is enclosed.

c. ☐ Please charge my Deposit Account No. \_\_\_\_\_ in the amount of \$ \_\_\_\_\_ to cover the above fees.  
 A duplicate copy of this sheet is enclosed.

d. ☒ The Commissioner is hereby authorized to charge any additional fees which may be required, or credit any  
 overpayment to Deposit Account No. 060308. A duplicate copy of this sheet is enclosed.

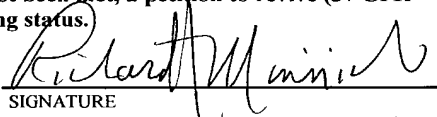
e. ☐ Fees are to be charged to a credit card. **WARNING:** Information on this form may become public. **Credit card  
 information should not be included on this form.** Provide credit card information and authorization on PTO-2038.

**NOTE:** Where an appropriate time limit under 37 CFR 1.494 or 1.495 has not been met, a petition to revive (37 CFR  
 1.137 (a) or (b)) must be filed and granted to restore the application to pending status.

SEND ALL CORRESPONDENCE TO

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 SIGNATURE  
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24,175  
 REGISTRATION NUMBER

09/937246

IN THE UNITED STATES PATENT AND TRADEMARK OFFICE

Applicant : Claudio Bernoni  
 Serial No. : Unknown  
 Filed : Herewith  
 Title : THREE PIECE WHEEL FOR MOTOR VEHICLES  
 Attorney Docket : BUG 2 0144

Assistant Commissioner For Patents  
 Washington, D.C. 20231

PRELIMINARY AMENDMENT

Dear Sir:

Prior to substantive examination of the above-identified patent application, please amend the application as follows:

IN THE CLAIMS:

Please amend claims 3 and 4 as follows:

3. A wheel as claimed in claim 1, characterised in that the connecting means are coach screws in the inner rim.

4. A wheel as claimed in claim 1, characterised in that the connecting means are stud bolts screwed in the inner rim and comprise fastening nuts acting on the disc.

"Express Mail" Mailing Label Number EL852683770

Date of Deposit Sept 21, 2001

I hereby certify that this paper or fee is being deposited with the United States Postal Service "Express Mail Post Office to Addressee" service under 37 CFR 1.10 on the date indicated above and is addressed to the Commissioner of Patents and Trademarks, Washington, DC 20231.

Jam Stepkg  
 (TYPED OR PRINTED NAME OF SENDER)  
[Signature]  
 (SIGNATURE)

Please add new claims 5-6 as follows:

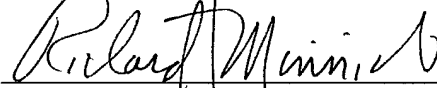
5. A wheel as claimed in claim 2, characterised in that the connecting means are coach screws in the inner rim.

6. A wheel as claimed in claim 2, characterised in that the connecting means are stud bolts screwed in the inner rim and comprise fastening nuts acting on the disc.

**REMARKS**

It is respectfully submitted that the subject application is now in better condition for examination.

Respectfully submitted,



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VERSION WITH MARKINGS SHOWING CHANGES MADE

3. A wheel as claimed in claim 1 [or 2], characterised in that the connecting means are coach screws[(5)] in the inner rim.

4. A wheel as claimed in claim 1 [or 2], characterised in that the connecting means are stud bolts[(18)] screwed in the inner rim and comprise fastening nuts[(19)] acting on the disc[(4)].

## Description

### Three Piece Wheel for Motor Vehicles

#### Technical Field

The present invention relates to a motor vehicle wheel in three parts joined by screws.

This type of wheel comprises three parts obtained separately: an inner  
5 rim, an outer rim, and a disc joined by welding or with screws.

Fastening with screws is preferable in case of maintenance on one of the rims, inner or outer, and to have greater manufacturing flexibility when defining groove width.

In other words, grooves of different widths can be produced more  
10 easily.

Generally, the disc is superposed on the outer rim for reasons of size, rigidity and aesthetics.

#### Background Art

15 US Patent 4 466 670 discloses a motor vehicle wheel of the type described above. Screws with nuts are used for fastening the parts. The screws must be positioned in such a way as to be reachable from the inner and outer side of the wheel and therefore are located at a certain radial distance from the tyre insertion groove. The outer rim can present a "C"  
20 shaped protuberance towards the inner rim which is superposed thereon to favour the required seal for tubeless tyres. US Patent 5 435 629 describes a three piece light alloy wheel, of the "sandwich" type. In this wheel, the disc is partially inserted between the two parts of the rim so that all parts must have accurate dimensional precision. The parts of the wheel, which are  
25 obtained by casting, are connected by screws with nuts and hence the screws are located at a certain radial distance from the tyre insertion groove.

The disc 4 is superposed to the outer rim 2 and both present a series of  
30 through holes 6 and 7, respectively in the disc 4 and in the outer rim 2,  
within which pass the screws 5. The inner rim 3 presents a groove 9 with a  
wall 10. In the thickness of the wall 10 is found a series of threaded blind  
holes 11 for the passage of the screws 5. The through holes 6, the through

35        The outer rim 2 made of plate presents numerous advantages: it has higher mechanical characteristics than cast rims and can better withstand





Key

- |    |    |                                     |
|----|----|-------------------------------------|
|    | 1  | wheel                               |
|    | 2  | outer rim                           |
|    | 3  | inner rim                           |
| 5  | 4  | disc                                |
|    | 5  | screws                              |
|    | 6  | first holes of the disc 4           |
|    | 7  | second holes of the outer rim 2     |
|    | 8  | axis of screws 5 of stud bolts 18   |
| 10 | 9  | groove                              |
|    | 10 | wall                                |
|    | 11 | threaded blind holes in inner rim 3 |
|    | 12 | neutral axis of wall 10             |
|    | 13 | connection area                     |
| 15 | 14 | first annular surface               |
|    | 15 | second annular surface              |
|    | 16 | third annular surface               |
|    | 17 | seal or weld                        |
|    | 18 | stud bolts                          |
| 20 | 19 | nuts for stud bolts 18              |

Claims

1. A three piece wheel (1) for motor vehicles, comprising an outer rim (2) provided with second holes (6) in proximity with its own periphery, an inner rim (3) provided with a groove (9) with a wall (10), the outer (2) and inner (3) rims forming a support for a tyre; a disc (4) provided with at least  
5 first holes (6) in proximity with its periphery, the disc (4) being partially superposed onto the outer rim (2); means (5; 18, 9) for connecting the disc (4), the outer rim (2) and the inner rim (3), the connecting means (5; 18, 19) being provided with an axis (8) and passing through the first (6) and the second holes (7) of the disc (4) and of the outer rim (2); the wheel (1) being  
10 characterised in that the connecting means (5; 18, 19) are inserted in the thickness of the wall (10) of the groove (9) of the inner rim (3) without projecting therefrom and in that the axis (8) of the connecting means (5; 18, 19) is in proximity to or coincident with the neutral axis (12) of said wall (10) of the groove (9) of the inner rim (3).  
15
2. A wheel as claimed in claim 1, characterised in that the disc (4), the inner rim (3) are obtained by casting and in that the outer rim (2) is made of stamped plate.
- 20 3. A wheel as claimed in claim 1 or 2, characterised in that the connecting means are coach screws (5) in the inner rim.
4. A wheel as claimed in claim 1 or 2, characterised in that the connecting means are stud bolts (18) screwed in the inner rim and  
25 comprise fastening nuts (19) acting on the disc (4).

(12) INTERNATIONAL APPLICATION PUBLISHED UNDER THE PATENT COOPERATION TREATY (PCT)

(19) World Intellectual Property Organization  
International Bureau



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2 August 2001 (02.08.2001)

PCT

(10) International Publication Number  
**WO 01/54924 A1**

(51) International Patent Classification<sup>7</sup>: B60B 3/04, 23/10

[IT/IT]; Via San Domenico, 9, I-35030 Selvazzano Dentro (IT).

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28 November 2000 (28.11.2000)

(74) Agents: **FUOCHI, Riccardo** et al.; Bugnion S.p.A., Via Goito, 18, I-40126 Bologna (IT).

(25) Filing Language: Italian

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(30) Priority Data:  
BO2000A000025 25 January 2000 (25.01.2000) IT

(71) Applicant (*for all designated States except US*): **O.Z. S.P.A.** [IT/IT]; Via Brocchi, 22, I-36061 Bassano del Grappa (IT).

**Published:**

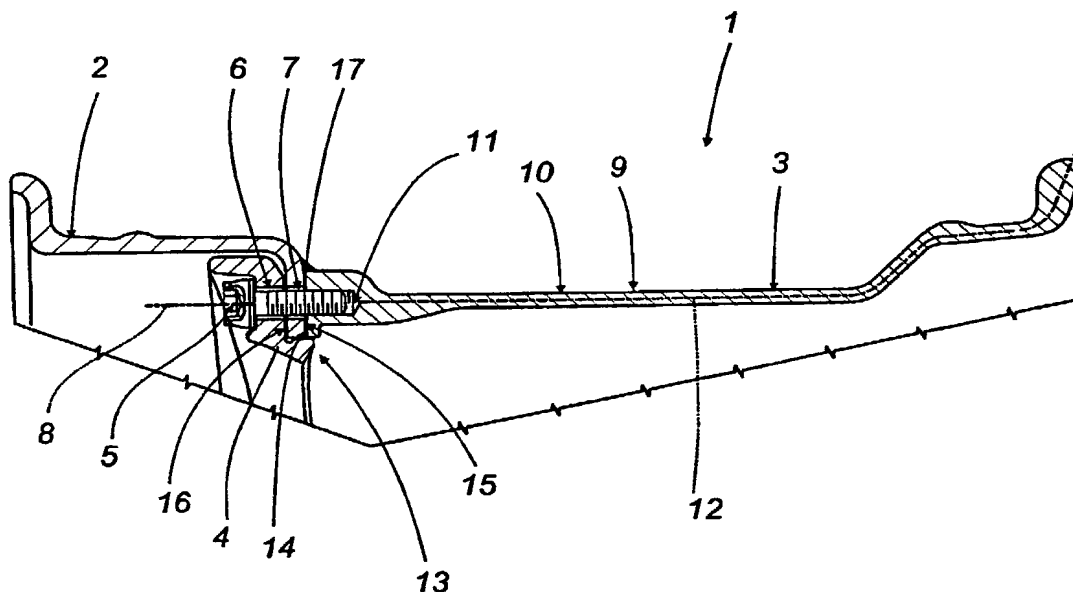
— with international search report

(72) Inventor; and

(75) Inventor/Applicant (*for US only*): **BERNONI, Claudio**

*For two-letter codes and other abbreviations, refer to the "Guidance Notes on Codes and Abbreviations" appearing at the beginning of each regular issue of the PCT Gazette*

(54) Title: THREE PIECE WHEEL FOR MOTOR VEHICLES



(57) Abstract: The invention relates to a wheel (1) made of three parts: an outer rim (2), an inner rim (3), a disc (4) joined by means of coach screws of stud bolts (18) directly screwed into the thickness of the wall (10) of the inner rim (3), the outer rim (2) can be made of stamped light alloy plate, whilst the other parts can be obtained by casting: advantages are achieved in terms of lightness, economy and aesthetics.

WO 01/54924 A1

1/1

FIG.1

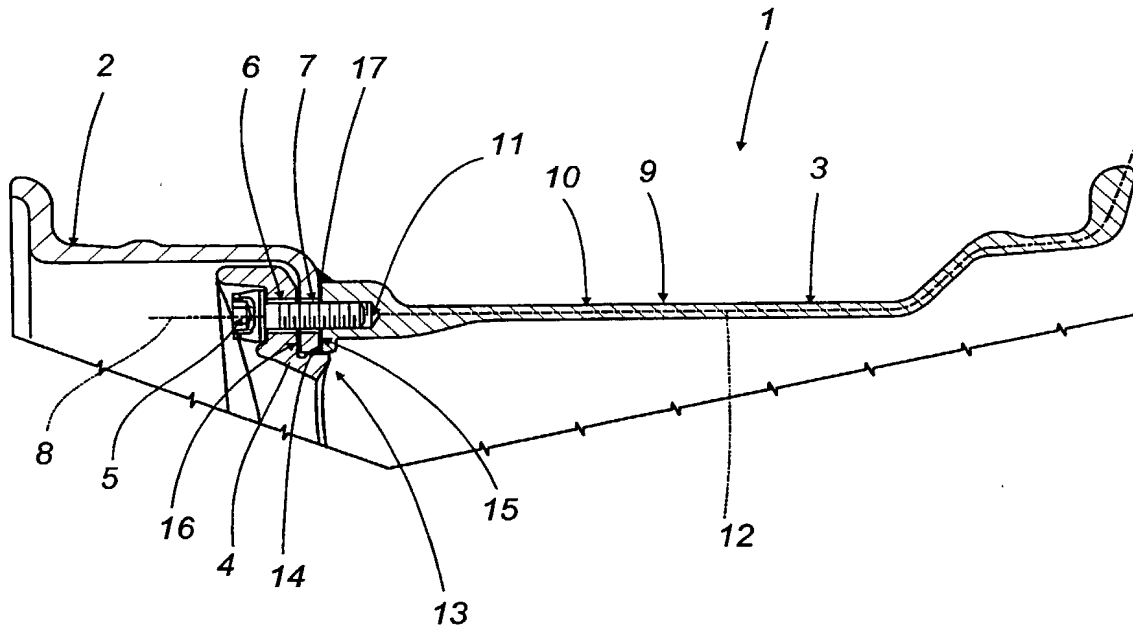
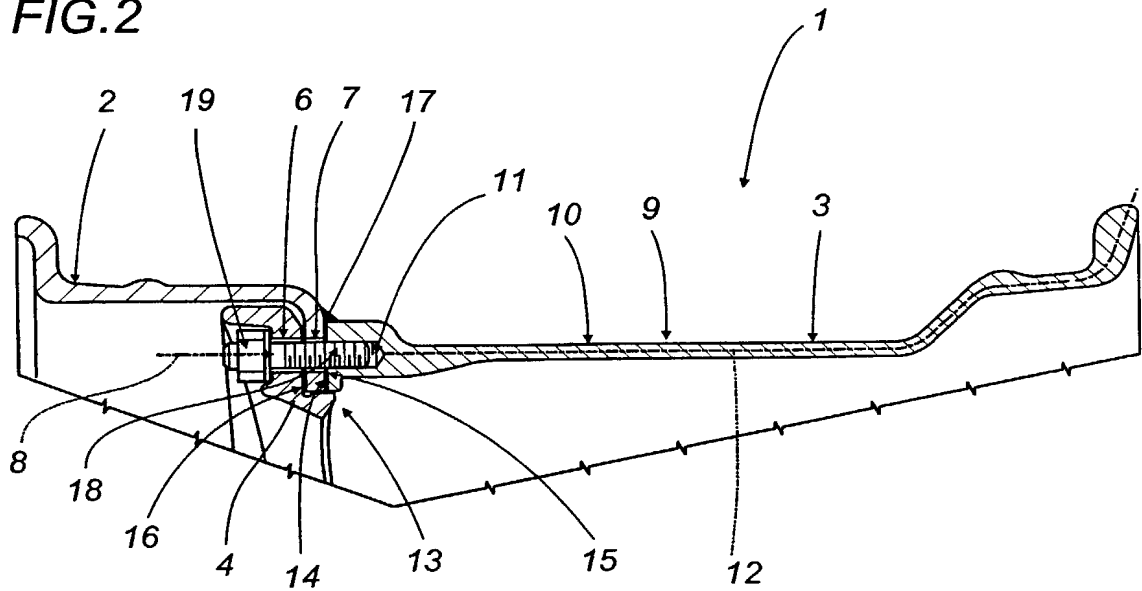


FIG.2



**DECLARATION FOR PATENT APPLICATION**

As a below named inventor, I hereby declare that:

My residence, post office address, and citizenship are as stated below next to my name.

I believe I am the original, first, and sole inventor (if only one name is listed below) or an original, first, and joint inventor (if plural names are listed below) of the subject matter which is claimed and for which a patent is sought on the invention entitled:

Three piece wheel for motor vehicles.  
\_\_\_\_\_  
\_\_\_\_\_

the specification of which:

☐ is attached hereto.

☒ was filed on November 28, 2000  
as ~~U.S.~~ Serial No. PCT/IB00/01767  
PCT

I hereby state that I have reviewed and understand the contents of the above-identified specification, including the claims, as amended by any amendment referred to above.

I acknowledge the duty to disclose information which is material to the examination of this application in accordance with Title 37, Code of Federal Regulations §1.56(a).

I hereby claim foreign priority benefits under Title 35, United States Code §119 of any foreign application(s) for patent or inventor's certificate listed below and have also identified below any foreign application for patent or inventor's







